

Addendum #1 to the Texas SUCCESS Comprehensive Evaluation Report



for the Texas Education Agency

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Acknowledgements

The authors of this addendum to the Texas SUCCESS Comprehensive Evaluation Report are grateful to the organizations and individuals who have contributed to this report. Staff from Istation Reading and Think Through Math provided the evaluation team with system usage data and generously donated their time to discuss technical issues related to the students-level usage and performance data generated for each of the online systems. This addendum report is sponsored by the Texas Education Agency, and many staff were involved in providing data for analysis, and feedback on results.

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Executive Summary

Background

Over the 2012–13 to 2014–15 school years, the Texas Students Using Curriculum Content to Ensure Sustained Success (SUCCESS) program offered state-funded access to computerized interactive mathematics and reading programs provided by two vendors—Istation Reading (Istation) and Think Through Math (TTM)—to all Texas public school students in Grades 3–8. Istation and TTM are adaptive programs designed to support student achievement by adjusting content based on student skill level and incorporating assessments to track student performance changes.

In fulfillment of Rider 50 (General Appropriations Act, Article III, 83rd Texas Legislature), Gibson Consulting Group, Inc. (Gibson), in partnership with Shore Research, Inc. (Shore), employed a mixed-methods approach to evaluating the Texas SUCCESS program implemented in school districts across the state. A few research questions that could not be answered because of data availability in the initial comprehensive evaluation report (published by TEA in January 2015) will be addressed in this addendum report.

This addendum to the Texas SUCCESS Comprehensive Evaluation Report addresses the following two research questions related to Istation and TTM:¹

- 1) Among students who were retained in Grade 5 or 8 between 2012–13 and 2013–14, to what extent does 2013–14 academic performance differ between Texas SUCCESS participants and non-participants, and what is the relationship between intensity of usage (i.e., dosage) and academic performance for this student population?
- 2) What is the relationship between Texas SUCCESS program usage and intensity of usage in 2013–14 and the probability of being retained in Grades 5 and 8 between 2013–14 and 2014–15?

Grade 5 and Grade 8 were selected for these analyses because they are grade levels in which students are subject to high-stakes state assessments and are required to pass the State of Texas Assessments of Academic Readiness (STAAR)-Reading and STAAR-Mathematics exams to be promoted to the next grade level.² In addition, the research questions posed in this addendum are geared toward students in at-risk situations (i.e., students retained in grade between 2012–13 and 2013–14, and students at-risk of being retained in grade between 2013–14 and 2014–15).

¹ The Texas SUCCESS Comprehensive Evaluation report can be accessed at http://tea.texas.gov/Reports_and_Data/Program_Evaluations/Reading_Math_Science_and_Technology_Initiatives/Program_Evaluation__Reading,_Math,_Science,_and__Technology_Initiatives/

² It is important to note that if a student does not pass the STAAR exam after three testing opportunities in Grades 5 and 8, the student may still be promoted to the next grade through a grade placement committee decision (Texas Education Code (TEC) 28.0211(e)).

Key Findings

Reading

Istation is a supplemental reading program that provides computer-adaptive instruction in an animated environment that is designed to improve phonemic awareness, alphabetic knowledge, vocabulary, and reading comprehension. Although Istation includes curricular materials for Grades Pre-Kindergarten through 8, it was offered free-of-charge to Texas public school students in Grades 3–8 as part of the Texas SUCCESS program. Istation includes an integrated assessment tool, administered monthly or upon log-in if more than a month has passed, that tailors the program’s curriculum to address students’ individual academic needs. The Istation vendor recommends that elementary school students use Istation curriculum for a minimum of 250 minutes and middle school students use the system for a minimum of 200 minutes throughout the school year.

Istation Student Outcomes

1) Among students who were retained in Grade 5 or 8 for 2013–14, to what extent does 2013–14 academic performance differ between Istation participants and non-participants, and what is the relationship between intensity of usage (i.e., dosage) and academic performance for this student population?

After examining Istation system usage patterns for Grades 5 and 8 students retained in grade between 2012–13 and 2013–14 and students not retained, Gibson explored the relationship between Istation usage and changes in student performance on STAAR-Reading for students in Grades 5 and 8 who were retained in grade between 2012–13 and 2013–14.³ Analyses were confined to students in Grades 5 and 8 in 2013–14 who were retained in grade between 2012–13 and 2013–14 and to students who were enrolled in schools where Istation was used in 2013–14.

The first research questions explored the relationship between both Istation usage (i.e., whether a student used the system for one minute or more) and usage intensity (i.e., whether a student used the system for the recommended number of minutes, or an even higher threshold of usage), and STAAR-Reading decile-standardized gains (hereinafter referred to as STAAR-Reading gains).⁴ While the primary research question explored the relationship between whether students retained in grade used Istation at all and STAAR-Reading gain scores, it is also important to understand if higher levels of system usage (i.e., usage intensity) are related to improved academic performance. Therefore, analyses were conducted for the following categories of Istation system usage:

³ A student is classified as having been retained if their grade of enrollment in fall 2012 matched their grade of enrollment in fall 2013.

⁴ Decile-standardized gain scores were used to control for prior STAAR performance differences among students included in the analyses. Gain scores reflect differences between 2012–13 and 2013–14 STAAR scale scores. This is explained in more detail in the Introduction section of this report.

- 1) Students who used the system at least one minute (i.e., used the system at all) compared to students who did not use the system;
- 2) Students who met the vendor usage recommendation for the corresponding grade level (i.e., 250 minutes for Grade 5 and 200 minutes for Grade 8) compared to students who did not meet the recommended usage threshold; and
- 3) Students who used the system 300 minutes or more (i.e., a measure of high intensity usage) compared to students who did not use the system.

Key findings from these analyses are as follows:

Student Population and Istation System Usage

A relatively small proportion of students at campuses where Istation was used in 2013–14 were students who were retained in Grades 5 and 8 between 2012–13 and 2013–14, resulting in a small, high-need student population included in outcomes analyses presented in this report.

- Students who had been retained in grade from 2012–13 to 2013–14 accounted for 1.4% (n=5,216) of Grade 5 students and .94% (n=3,567) of Grade 8 students who used the system at Istation campuses in 2013–14. Therefore the subsequent analysis is on a small, high need population.

Students in Grades 5 and 8 who were retained in grade between 2012–13 and 2013–14 used Istation at higher levels during the 2013–14 school year than students who were not retained in grade during this period.

- On average, Grade 5 students who were retained in grade recorded almost an hour more Istation usage over the course of the 2013–14 school year (239 minutes compared to 182 minutes) than students who were not retained.
- System usage levels for students in Grade 8 were relatively low compared to elementary school students; however, Grade 8 students who were retained in grade between 2012–13 and 2013–14 recorded an average of 49 minutes of Istation usage in 2013–14 compared to 38 minutes for students who were in Grade 8 for the first time in 2013–14.

Reading Outcomes

No statistically significant relationship was found between the use of Istation by Grade 5 and 8 students retained in grade between 2012–13 and 2013–14 and STAAR-Reading gains in 2013–14.

- After adjusting for other student, school, and district-level characteristics, there were no statistically significant improvements in 2013–14 STAAR-Reading score gains for retained Grade 5 and Grade 8 students when the results of Istation users were compared to those of nonusers.

No statistically significant relationship was found between intensive usage (e.g., 300 or more minutes over the course of the 2013–14 school year) of Istation by Grade 5 and 8 students retained in grade between 2012–13 and 2013–14 and STAAR-Reading gains in 2013–14.

- After adjusting for other student, school, and district-level characteristics, no statistically significant differences in 2013–14 STAAR-Reading gains were observed among Grade 5 and 8 students retained in grade between 2012–13 and 2013–14 who used the system for 300 or more minutes and those who did not use the system at all.

While it was fairly rare for students to be retained in grade between 2012–13 and 2013–14, and for students to use Istation at the recommended levels (i.e., 250 minutes for Grade 5 students and 200 minutes for Grade 8 students) during the 2013–14 school year, when these thresholds were reached, Grade 8 students had significantly larger reading gains than students who did not reach the recommended threshold level. The opposite effect was observed for Grade 5 students.

- Retained Grade 8 students who used Istation for 200 or more minutes during 2013–14 had statistically significant, moderately larger reading gains (.29 standard deviations) than retained students who used the system at levels below the recommended usage threshold.⁵
- Contrary to the finding for retained Grade 8 students, among Grade 5 students, students who used Istation at or above the annual level of 250 minutes or more had smaller STAAR-Reading improvements when compared to Grade 5 students who did not use the system at the recommended level; the relationship was statistically significant.

2) What is the relationship between Istation program usage and the probability of being retained in Grades 5 and 8 between 2013–14 and 2014–15?

This research question assessed the relationship between Istation usage and usage intensity in 2013–14 and the probability of being retained in Grade 5 or 8 for 2014–15. Grade retention was determined by comparing students' fall 2013 grade of enrollment to their fall 2014 grade of enrollment: if the grade levels matched, students were flagged as having been retained in grade. If a student advanced grade levels between 2013–14 and 2014–15, the student was classified as having been promoted.

Analyses were disaggregated by both grade level and by students' risk of being retained, where students were classified as at risk of being retained if they had failed a STAAR-Reading assessment in 2011–12 (two years prior to 2013–14) or 2012–13 (one year prior to 2013–14).

After adjusting for other student, school, and district-level characteristics, no statistically significant differences in the probability of being retained in grade were found between participating and non-participating students.

⁵ Only 234 (6.5%) Grade 8 students retained in grade between 2012–13 and 2013–14 used Istation for 200 or more minutes in 2013–14.

- This finding was consistent regardless of grade level or a students' at-risk status, and held across all measures of Istation usage and usage intensity (i.e., dosage).

Mathematics

TTM is a supplemental mathematics program that provides web-based adaptive instruction in an animated environment that is designed to improve students' understanding of critical mathematics concepts and problem-solving skills. TTM includes instructional materials that cover mathematics content for Grades 3–8 and Algebra I. TTM was offered free-of-charge to Texas public school students in Grades 3–8 as part of the Texas SUCCESS program. TTM includes a diagnostic assessment tool that maps out a learning pathway based on students' individual academic needs and students' pathways are adjusted in response to performance on quizzes given at the completion of lessons. The TTM vendor suggests that students attempt a minimum of 5 lessons but recommends students attempt 10 or more lessons.

TTM Student Outcomes

1) Among students who were retained in Grade 5 or 8 between 2012–13 and 2013–14, to what extent does 2013–14 academic performance differ between TTM participants and non-participants, and what is the relationship between intensity of usage (i.e., dosage) and academic performance for this student population?

After examining TTM usage patterns for Grade 5 and 8 students retained for 2013–14 and students not retained, Gibson explored relationship between TTM usage and changes in student performance on STAAR-Mathematics for students in Grades 5 and 8 who were retained in grade between 2012–13 and 2013–14.⁶ Analyses were confined to students in Grades 5 and 8 in 2013–14 who were retained in grade between 2012–13 and 2013–14 and to students who were enrolled in schools where TTM was used in 2013–14.

The primary research question explored the relationship between students retained in grade between 2012–13 and 2013–14 who attempted one or more TTM lessons and 2013–14 STAAR-Mathematics gain scores for students; however, it is also important to understand if higher levels of system usage (i.e., usage intensity) are related to improved academic performance. Therefore, to fully address the first research question, analyses were conducted for the following categories of TTM system usage:

- 1) Students who attempted at least one TTM lesson (i.e., used the system at all) compared to students who did not use the TTM system at all;
- 2) The number of TTM lessons a student attempted (i.e., a continuous variable of attempted lessons);

⁶ A student is classified as having been retained if their grade of enrollment in fall 2012 matched their grade of enrollment in fall 2013.

- 3) Students who attempted less than the minimum number of five TTM lessons based on vendor recommendation (i.e., 1 to 4 lessons attempted) compared to students who did not attempt any lessons; and
- 4) Students who attempted either 5 to 9 lessons, 10 to 14 lessons, 15 to 19 lessons, or 20 or more lessons (i.e., four measures of increasingly high intensity usage) compared to students who did not attempt any lessons.

Key findings from these analyses are as follows:

Student Population and TTM System Usage

A relatively small proportion of students at campuses where TTM was used in 2013–14 were retained in Grades 5 and 8 between 2012–13 and 2013–14, resulting in a small, high-need student population included in outcomes analyses presented in this report.

- Students who had been retained in grade from 2012–13 to 2013–14 accounted for approximately 1.5% (n=5,224) of Grade 5 students and 1.0% (n=3,591) of Grade 8 students who used the system at TTM campuses in 2013–14. Therefore the subsequent analysis is on a small, high need population.

Students in Grades 5 and 8 who were retained in grade between 2012–13 and 2013–14 used TTM less frequently during the 2013–14 school year than students who were not retained in grade during this period.

- Approximately 43% of Grade 5 students who were retained in grade between 2012–13 and 2013–14 attempted at least one TTM lesson versus 46% of students who were not retained. The gap in percentage of students using the TTM system at the minimum recommended usage level (i.e., 5 attempted lessons) decreased by one percentage point for Grade 5 students who were retained in grade (36%) compared to students who were not retained (37%).
- On average, Grade 5 students who were retained in grade attempted a comparable number of TTM lessons throughout the course of the 2013–14 school year to students not retained (9.26 versus 9.77).
- TTM system usage levels for student in Grade 8 were relatively low compared to Grade 5 students. Approximately 19% of retained Grade 8 students attempted at least one TTM lesson compared to 25% of first-time Grade 8 students. Likewise, for students who attempted 5 or more TTM lessons, 10% of retained Grade 8 students and 15% of first-time Grade 8 students used at this level.
- On average, students in Grade 8 who were retained in grade between 2012–13 and 2013–14 attempted slightly fewer mathematics lessons in 2013–14 (2.70 TTM lessons) than students who were in Grade 8 for the first time in 2013–14 (3.79 TTM lessons).

Mathematics Outcomes

No statistical relationship was found between the use of TTM by Grade 5 and 8 students retained in grade between 2012–13 and 2013–14 and STAAR-Mathematics gains in 2013–14.

- After adjusting for other student, school, and district-level characteristics, there were no statistically significant differences in 2013–14 STAAR-Mathematics score gains for retained Grade 5 and Grade 8 students when the results of students who attempted at least one TTM lesson were compared to those of students who did not attempt any TTM lessons.

Among students in Grades 5 and 8 who were retained in grade between 2012–13 and 2013–14, a positive and statistically significant relationship was observed between the number of TTM lessons attempted and 2013–14 STAAR-Mathematics gains.

- The difference was statistically significant and moderate (.943 for Grade 5 and .905 for Grade 8) for each additional lesson attempted.
- This finding is slightly different from findings in the Texas SUCCESS Comprehensive Evaluation Report (Garland, Shields, Booth, Shaw, Samii-Shore, 2015), which showed that the relationship between being at-risk of being retained in grade and TTM usage was associated with smaller STAAR-Mathematics gains.

Among students in Grade 5 who were retained in grade between 2012–13 and 2013–14, a positive and statistically significant relationship was observed between attempting 1 to 4 TTM lessons and 2013–14 STAAR-Mathematics gains.

- After adjusting for other student, school, and district-level characteristics, Grade 5 students who attempted between one and four lessons experienced statistically significant differences relative to students who did not use the system (.174 standard deviations higher).
- This relationship was not observed for Grade 8 students.

Increasingly intensive TTM usage over the course of the 2013–14 school year by retained Grade 5 and 8 students was not related to larger STAAR-Mathematics gains in 2013–14 when compared to students who did not use the system at all.

- After adjusting for other student, school, and district-level characteristics, no statistically significant differences in 2013–14 STAAR-Mathematics gains were observed among Grade 5 and 8 students retained in grade between 2012–13 and 2013–14 who used TTM at increasingly intensive levels (5 to 9 attempted lessons, 10 to 14 attempted lessons, 15 to 19 attempted lessons, or 20 or more attempted lessons) relative to students who did not use the TTM system at all.

2) What is the relationship between TTM program usage and the probability of being retained in Grades 5 and 8 between 2013–14 and 2014–15?

The evaluation team explored the relationship between TTM usage in 2013–14 and the probability of being retained in Grade 5 or 8 between 2013–14 and 2014–15. Analyses were disaggregated by both grade level and by students' risk of being retained in grade, where students were classified as being at risk of being retained in grade if they had failed a STAAR-Mathematics assessment in 2011–12 (two years prior to 2013–14) or 2012–13 (one year prior to 2013–14).

After adjusting for other student, school, and district-level characteristics, there were a few TTM usage and intensity of usage variables that were statistically significantly associated with retention outcomes.

- In Grade 5, students who attempted at least one lesson in 2013–14 were significantly less likely to be retained in grade between 2013–14 and 2014–15.
- For Grades 5 and 8 students, each additional attempted lesson was associated with a significantly lower likelihood of being retained in grade between 2013–14 and 2014–15. This was also the case for students in each grade who attempted greater than 20 TTM lessons.
- Grade 5 and 8 students were less likely to be retained in grade between 2013–14 and 2014–15 with high levels of TTM lesson attempts (20 or more lessons attempted).
- Each of these findings held for all first-time Grade 5 and 8 students, as well as first-time Grade 5 and 8 students who were at risk of being retained in grade between 2013–14 and 2014–15.

As was the case with reading-related findings, it is important to keep in mind that the population of students who met the usage criteria, and who had sufficient data to be included in the statistical model, was small (i.e., only 367 retained Grade 8 students attempted 5 or more TTM lessons) and observably different from the overall student population. For instance, in Grade 8, fewer than 3,000 students were retained in grade between 2012–13 and 2013–14. Consequently, the results should be interpreted with caution.

Additional limitations to the analyses can be found in Appendix C.